Summary of Statewide Residential Dynamic Pricing **Pilot**

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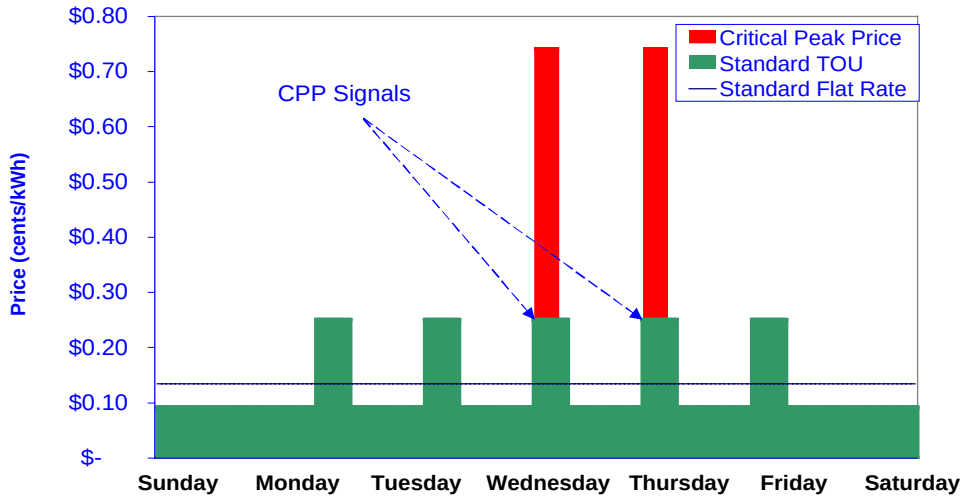
Summary- This document summarizes a statewide pilot test of dynamic pricing for residential and small commercial customer in California. Representatives from the state's investor owned utilities, state energy agencies, and customer groups have designed a statewide test of dynamic pricing for California's residential and small commercial customers. The pilot test will begin in the summer of 2003. It is designed to monitor customer energy use in response to different types of dynamic pricing where prices vary by time of use and market conditions. Customers will be place on time of use prices and receive critical peak "price" signals over a 12 to 18 month period for a stratified sample of 2500 customers in California. Customers will be initially chosen based on their location and usage characteristics and allowed to opt out of the experiment at any time during the pilot. Residential and small commercial customers will have interval meters, meters which record electricity usage every 15 minutes, installed in the summer of 2003. Each customer will be randomly placed on two different time varying or "dynamic" rates: either a time-of-use rate only or a time of use rate with the addition of critical peak price signals that let customers know when supply demand balances are tight and costs are high. Utility dispatchers will give customers day-ahead notice that prices for electricity usage will be much higher during critical peak price period for up to 15 days per summer. The experiment will last for a minimum of 12 months to give customers time to understand and adapt to the new dynamic rates (shown below).

Figure 1-
Illustration of New Experimental Rates



Description of the new "dynamic" rates- Figure 1 illustrates the daily pattern for the time of use and critical peak price (CPP) signals used in the pilot. During the experiment, customers will receive prices that reflect the pattern of increased cost of electricity production and delivery during hot afternoons and decreasing costs over night. The new time of use prices range from 9 cents in the off peak period (during weekday morning and evenings and all weekend days) to 25

cents on peak (from 2 PM to 7 PM). These prices are compared to the average current flat rate for residential customers of roughly 14 cents/ kWh.

Customers will receive day ahead notification that their cost of electricity will rise to the critical peak price (CPP signals in Figure 1) of 75 cents /kWh for up to 15 days per year when hot weather or system emergencies raise the cost of delivering electricity to all customers. As the graph shows, customers participating on this new rate will receive lower cost electricity prices for 85% of the time but will be exposed to higher peak prices during weekday afternoons and extremely high prices for up to 15 days per year during the same weekday afternoon period.

Research Questions to be answered during the pilot

1. **Magnitude of customer price response**-Will residential and small customers significantly reduce their peak period energy use in response to time of use or "emergency" price signals? What is the average price elasticity observed for time of use and or critical peak prices? Does the expected level of customer response vary by different climate zones and economic strata, or by the types of control technologies available, or the types of information available to customers on their " real time energy use"? Can the level of price response be reliably predicted at the system level, for example if prices go up by 50% for all customers during the peak will aggregate demand drop reliably by 5 or 10% during that time period?.
2. **Impact of automated controls equipment on household peak demand** - Some customers will be given equipment that automatically reduces household electric loads (from air conditioning, pool pumps, and electric water heaters) in response to increases in price. The pilot will determine whether the demand reductions observed for customers who choose to use automatic controls is higher or lower than for customers who respond manually to day ahead warnings that prices will be high the next day. The pilot will measure these difference and analyze whether it would it be cost effective to install these devices for some or all types of residential customers.
3. **Impact of information and feedback on Household Peak Demand-**What types of information materials, displays, or feedback on current energy usage were used and preferred by customers? What types of information contribute to increased levels of peak reduction/demand response or price elasticity? For example do customers with access to their real time energy usage data actually seek and use the data? Do they exhibit more peak savings/ demand response than customers who do not seek information on their daily energy use pattern?
4. **Customer acceptance of dynamic rates**- Are customers comfortable with the use of either critical peak prices dispatched on a day ahead basis or on a few hours notice? Are the additional benefits of having more control over your bills worth more than the risks or costs associated with having to adapt to higher prices on a few days per year?

Public Policy Issues for future analysis based on pilot results-

1. Do the peak load reduction and other benefits of installing time of use or interval meters exceed the installation costs for most or all customers, regardless of energy use level, location, or customer sophistication?
2. Will some, most, or all customers be comfortable with the use of critical peak prices as their basic rate structure? What fraction of a representative sample of residential customers would likely choose to be placed on a critical peak pricing rate, a time of use rate or pay the premium associated with flat electricity rates?